Claims

1. Composition comprising an aqueous dispersion of particles (p) of mean hydrodynamic diameter between 50 and 5000 nm, wherein said particles contain, in association:

(A) polymers based on cyclodextrin units, with an average content of at least 4 cyclodextrin units within their structure; and

(B) macromolecules of polysaccharides comprising groups G capable of forming inclusion complexes with the cyclodextrins present in the structure of the said polymers (A), with an average number of groups G per polysaccharide macromolecule at least equal to 3,

wherein said compounds (A) and (B) are water-soluble in the isolated state.

2. Composition according to Claim 1, characterised in that the particles (p) have a mean hydrodynamic diameter greater than or equal to 80 nm and less than or equal to 500 nm.

3. Composition according to Claim 1 or Claim 2, characterised in that the polymers (A) have on average at least 9 cyclodextrin units within their structure.

4. Composition according to any one of Claims 1 to 3, characterised in that the cyclodextrin units present in the polymers (A) comprise β-cyclodextrins.

5. Composition according to Claims 1 to 4, characterised in that the polymers (A) are obtained by polycondensation of cyclodextrin and epichlorhydrin molecules.

6. Composition according to any one of Claims 1 to 5, characterised in that the polymers (A) have a mean molar mass by number of between 10 000 and 3 000 000 g/mole.

7. Composition according to any one of Claims 1 to 6, characterised in that the groups G are aliphatic groups, linear or branched, having 8 to 18 carbon atoms.

8. Composition according to any one of Claims 1 to 7, characterised in that the rate of grafting of the polysaccharides (B) by the groups G is between 1 and 8%.

9. Composition according to any one of Claims 1 to 8, characterised in that the compounds (A) and (B) are chosen from amongst the following associations:

- polymers (A) having from 18 to 1000 β-cyclodextrin units / polysaccharides (B) of molecular mass between 6 000 and 70 000 grafted by C12 aliphatic groups and having a hydrophobic substitution rate of 3 to 5%;

- polymers (A) having from 100 to 600 β-cyclodextrin units / polysaccharides (B) of molecular mass between 6 000 and 70 000 grafted by C10 aliphatic groups and having a hydrophobic substitution rate of 5 to 7%;

- polymers (A) having from 18 to 1000 β-cyclodextrin units / polysaccharides (B) of molecular mass between 6 000 and 70 000 grafted by adamantyl groups and having a hydrophobic substitution rate of 3 to 4%.

10. Composition according to any one of Claims 1 to 9, characterised in that the molar ratio of the total quantity of cyclodextrin units present within the polymers (A) relative to the total quantity of aliphatic chains present by way of substituents on the polysaccharide macromolecules (B) is between 1:3 and 3:1.

11. Composition according to any one of Claims 1 to 10, characterised in that at least 80% by mass of the compounds (A and B) present in the composition are contained in the particles (p).

12. Composition according to any one of Claims 1 to 11, characterised in that the particles (p) comprise at least one additional chemical compound (C) other than the compounds (A) and (B).

13. Composition according to Claim 12, characterised in that the said compound (C) is a compound capable of forming an inclusion complex with one of the cyclodextrin units contained in the polymers (A) present in the particles (p).

14. Composition according to Claim 12 or Claim 13, characterised in that the quantity of compound (C) integrated within the particles (p) represents at least 0.5% by mass relative to the total mass of the said particles (p).

15. Composition according to any one of Claims 12 to 14, characterised in that the compound (C) is a compound having a therapeutic or cosmetic effect and that the said composition is a pharmaceutical or cosmetic composition.

16. Method of preparation of a composition according to any one of Claims 1 to 11, characterised in that it comprises a step (E) which consists of effecting a mixture of an aqueous solution (S_A) comprising polymers (A) as defined in Claim 1 and an aqueous solution (S_B) comprising polysaccharide macromolecules (B) as defined in Claim 1, the volumes and the concentrations of the said solutions (S_A) and (S_B) being chosen in such a way as to obtain, after the mixing, an aqueous medium where the respective concentrations C_A and C_B in the said compounds (A) and (B) belong to the range for formation of a metastable dispersion for the auto-associative system (A+B) used.

17. Method according to Claim 16, characterised in that in the medium obtained at the end of step (E):

- the sum of the concentrations C_A+C_B is between 0.1 and 20 g/l; and

- the molar ratio of the total quantity of cyclodextrin units present within the polymers (A) introduced, relative to the total quantity of aliphatic chains present as substituents on the polysaccharide macromolecules (B) introduced is between 1:3 and 3:1, and preferably between 1.2 and 2.1.

18. Method according to Claim 16 or Claim 17, characterised in that the concentration of the solution (S_A) is between 0.01 g/l and 20 g/l, that the concentration of the solution (S_B) is between 0.01 g/l and 20 g/l, and that the ratio of the total volume of solution (S_A) introduced to the total volume of solution (S_B) introduced is between 1:9 and 9:1.

19. Method of preparation of a composition according to any one of Claims 12 to 15, characterised in that it consists of placing the said compound (C) in contact with a composition as claimed in any one of Claims 1 to 14.

20. Method of preparation of a composition according to any one of Claims 12 to 15, characterised in that it comprises a step which consists of effecting a mixture of an aqueous solution (S_A) comprising polymers (A) as defined in Claim 1 and the said additional compound (C) and an aqueous solution (S_B) comprising modified polysaccharides (B) as defined in Claim 1, the volumes and the concentrations of the said solutions (S_A) and (S_B) being chosen in such a way as to obtain, after the mixing, an aqueous medium where the respective concentrations C_A and C_B in the said compounds (A) and (B) belong to the range for formation of a metastable dispersion for the auto-associative system (A+B) used.

21. The use of a composition according to any one of Claims 1 to 11 in order to achieve encapsulation of chemical compounds.

22. The use of a composition according to any one of Claims 12 to 15 in order to achieve a progressive release of compounds (C) present within the particles (p) within a medium into which the said composition is introduced, or in order to limit the contact between the said compounds (C) and the said medium.

23. The use of a composition according to Claim 15, where the compound (C) is an active compound by way of a medicament, for the manufacture of a pharmaceutical composition intended to deliver the said compound (C) in a progressive manner and/or to deliver this compound (C) in a selective manner at the level of a given mucous membrane.

24. Composition obtainable at the end of the lyophilisation of a composition according to any one of Claims 1 to 15.